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EXAMINER	
AMRANY, ADI	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/675,537	HARRIS ET AL.	
	Examiner	Art Unit	
	Adi Amrany	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,6,10-24,26-34,37-39,56 and 57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6,10-24,26-34,37-39,56 and 57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed August 28, 2006 have been fully considered but they are not persuasive.

Mihailovich (US 6,417,743) discloses an electrical generator as per the independent claims of the present application. The Mihailovich apparatus generates output power that is proportional to the input power (column 2, lines 56-58; column 5, lines 2-4). The insulating portion of the apparatus isolates the output detector circuit from the input source generator circuit (column 3, line 66 to column 4, line 4). The apparatus does in fact sense the capacitance (Cc) through the detector circuit (36), but this is because there is no electrical connection between the capacitors (column 5, lines 4-7) and sensing the capacitance is the only way of reproducing the input signal at the output. Mihailovich further discloses the detector circuit includes an operational amplifier (figure 4, item 46; column 6, lines 34-49) to generate power for a load.

Claim 1 is amended to include the limitation of an electrical loop having a movable conductive arm in mechanical communication with the beam. Mihailovich does not disclose such an electrical loop. Mihailovich, therefor, does not anticipate claim 1, but independent claims 22 and 34 were not amended to include this limitation, and remain anticipated by Mihailovich.

With respect to applicants' arguments regarding Herbert (US 2002/070723), Herbert discloses a magnet and loop type electrical generator (figure 2). The magnet is designated by flux lines (32) and the loop is shown within the arms (14, 16, 18) of the

device (paragraph 46, lines 5-9). The conductors each form loops by tracing the outlines of the transverse arms (paragraph 50). Without an electrical loop in the magnetic field, the Herbert device would not operate.

Applicants' argue that Herbert uses output electrical signals for sensing purposes and not to power a load. This argument is not persuasive. The Herbert apparatus is an isolator (paragraph 36; paragraph 50, lines 6-8) that produces an output signal proportional to the input signal. Herbert discloses that the MEMS device may include an amplifier (paragraphs 27-28 and 66). The Herbert apparatus includes a sensor, but this sensor (figure 2, item 24) is designed to sense the mechanical movement of the beam (power transfer structure) to reconstruct the input voltage (paragraph 50), and output the voltage to a load.

With respect to the remarks regarding claim 34 (incorrectly written as 32), applicants argue that the claim is amended to include the limitation of a load positioned on the integrated substrate. It is inherent that the Herbert apparatus includes a load. Further, integration of a load and its power source is not an inventive step, as will be discussed below.

The amendments to claims 1 and 22 do not place the claims in condition for allowance over the disclosure of Herbert. The amendments to claim 34 require a new rejection under 35 U.S.C. §103(a).

Lastly, applicants' statements that Mihailovich and Herbert are assigned to the same assignee are irrelevant, as both references are used in a 35 U.S.C. §102(b) rejection.

Claim Objections

2. Claims 5-6 and 37 are objected to because they are dependent on cancelled claims 4 and 36, respectively. For the purpose of the art rejection of claims 5-6, they will be treated as depending on claim 3, and for claim 37, it will be treated as depending on claim 34.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Mihailovich (US 6,417,743).

With respect to claim 22, Mihailovich discloses a MEMS device including a source generator (figure 2, items 24, 32; column 4, lines 56-59), a power transfer structure (figure 2, item 26; column 4, lines 47-55 and line 66 to column 5, line 2) in communication with the source generator, and an electrical generator (figure 2, item 36; column 4, lines 63-65) in communication with the power transfer structure and further in electrical communication with a load (column 5, lines 2-4), a method of transferring isolated electrical power (column 1, lines 4-7; column 3, line 66 to column 4, line 4) from the source generator to the load, the method comprising the steps of:

applying first electrical power to the source generator for generating a mechanical output at the source generator (column 4, lines 66-67);

moving the power transfer structure in response to the mechanical output (column 4, line 67 to column 5, line 2), wherein at least a portion of the power transfer structure separating the source generator and the electrical generator is insulating (column 5, lines 4-7);

actuating the electrical generator to produce a second electrical power in response to step (b) (column 5, lines 2-4); and

delivering the second electrical power produced in step (c) to the load to power the load (figure 2, item 18; column 4, lines 32-45).

The load may include a telephone, a device that receives its operating power through the data transmission lines.

With respect to claim 23, Mihailovich discloses the method as recited in claim 22, and further discloses the power transfer structure further comprises a movable beam (figure 3, item 26; column 4, lines 66-67) that moves in response to actuation of the power transfer structure, as discussed above.

5. Claims 1-3, 10, 13, 16-17, 20-24, 28-30 and 32-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Herbert (US 2002/0070723).

With respect to claim 1, Herbert discloses an electrically isolated power transfer MEMs device (figure 2; paragraph 46, lines 1-5) for delivering electric power to a load, the device comprising:

a source generator (figure 2, items 14, 22; paragraph 46, lines 5-9) including a movable member (figure 2, item 14), wherein the source generator converts an electrical input signal to a displacement of the movable member;

a power transfer structure (figure 2, item 12; paragraph 44) defining an input end in communication with the movable member that receives the displacement, and an output end, opposite the input end that communicates the displacement, wherein at least a portion of the power transfer structure between the input and output ends is insulating (figure 2, items 28 and 30; paragraph 46, lines 1-5);

an electrical generator (figure 2, item 24; paragraph 47, lines 1-5) disposed at a second end of the device receiving the displacement from the output end of the power transfer structure (figure 2, item 12b) and, in response to the displacement, generates electrical power that is delivered to the load;

wherein the electrical generator comprises an electrical loop (figure 2, items 14, 16, 18; paragraph 50) having movable conductive arm in mechanical communication with the beam, wherein movement of the beam deflects the arm in the presence of a magnetic field (figure 2, item 32) to generate power.

The Herbert MEMS device is an electrical isolator (paragraph 4, lines 1-3). Therefor, it is inherent that the device is designed to reproduce an electrical signal at the output (sensor, item 24). The output electrical signal created by the capacitor banks (figure 2, items 36a and 36b) is sensed at terminals (figure 2, items 38a and 38b), and the output electrical signal is then supplied to the load. The magnet and loop type of

electrical generator is shown in figure 2. Each traverse arm contains a conductive loop which is placed in a magnetic field, represented by flux lines (32).

With respect to claim 2, Herbert discloses the device as recited in claim 2, and further discloses the insulated power transfer structure further comprises an elongated beam (figure 2, item 12; paragraph 44) disposed between the source generator and the electrical generator.

With respect to claim 3, Herbert discloses the device as recited in claim 1, and further discloses that the beam moves in response to the output of the source generator (paragraph 46, lines 5-9).

With respect to claim 10, Herbert discloses the device as recited in claim 1, and further discloses the source generator comprises a Lorentz actuator (paragraph 45, lines 5-8, "Lorentz motor") including a movable arm (figure 2, item 14) in mechanical communication with the beam, wherein electrical current is supplied to the arm in the presence of a magnetic field to generate a force that displaces the movable member (paragraph 46, lines 5-9).

With respect to claim 13, Herbert discloses the device as recited in claim 1, and further discloses the source generator comprises an electrostatic generator having a set of capacitor plates (figure 2, items 36a and 36b; paragraph 47) including at least one movable plate that is in mechanical communication with the power transfer structure.

With respect to claim 16, Herbert discloses the device as recited in claim 13, and further discloses the electrostatic generator receives a voltage input from a piezoelectric

actuator (paragraph 45, lines 5-8, "piezoelectric motor"). Herbert discloses using various combinations of source generators and electrical generators.

With respect to claim 17, Herbert discloses the device as recited in claim 13, and further discloses that the electrostatic actuator receives a voltage input from a thermocouple (paragraph 45, lines 5-8, "thermal expansion motor").

With respect to claim 20, Herbert discloses the device as recited in claim 1, and further discloses the power transfer structure oscillates during operation, further comprising compensation elements (figures 3 and 5; paragraphs 51-52 and 67) to maintain the oscillation of the power transfer structure at a resonant frequency.

Herbert discloses compensation elements (24') that are operated to change the resonant frequency of the power transfer structure. Therefor, it is inherent that the power transfer structure oscillates at its resonant frequency. Further, since the disclosed compensation elements maintain a resonant frequency, it is inherent that the power transfer structure oscillates.

With respect to claim 21, Herbert discloses the device as recited in claim 1, and further discloses the source generator further comprises a bi-morph (paragraph 45, lines 5-8, "thermal-expansion motor"). A bi-morph is an actuator that is composed of two different materials, such that one elongates more than the other on the application of a stimulant, which in the applicants' specification, is heat (page 16, lines 10-13). It is inherent that thermal-expansion motor operates under the same principles of heat application.

With respect to claims 22-24, and 29, Herbert discloses the apparatus that is necessary to complete the claimed method steps. The apparatus disclosed by Herbert is discussed above in the §102(b) rejections of claims 1-3 and 10, and below in the rejections of claims 34 and 37.

With respect to claim 28, Herbert discloses the method as recited in claim 22, and further discloses the source generator comprises a mass in mechanical communication with the power transfer structure (figure 2, item 12; paragraph 46, lines 1-5), and wherein step (b) comprises moving the MEMS device to actuate the mass (paragraph 46, lines 5-9)

With respect to claim 30, Herbert discloses the apparatus necessary to complete the method as recited in claim 22, and further discloses the source generator receives the electrical current from one of a piezoelectric actuator and a thermal actuator (paragraph 45, lines 5-8).

With respect to claim 32, Herbert, discloses the method as recited in claim 22, as further discloses the apparatus necessary to complete the method recited in claim 32, as discussed above in the rejection of claim 13.

With respect to claim 33, Herbert discloses the method as recited in claim 32, and further discloses that the electrical power is received via one of a piezoelectric actuator and a thermal actuator (paragraph 45, lines 5-8).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 5-6, 11-12, 19, 26-27, 34 and 37-39 are rejected under 35 U.S.C. 103(a) as being obvious in view of Herbert.

With respect to claim 5, Herbert discloses the device as recited in claim *3*, as discussed above, and further, it would have been obvious to a person of ordinary skill in the arts to duplicate the electrical generator of claim *3* in order to create a plurality of movable arms connected in series. The motivation for doing so would have been to create a plurality of power sources connected in series, where the total output of the system is the cumulative voltage converted by the movable arms. See MPEP 2144.04, *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960), where the court held that mere duplication of parts has no patentable significance unless anew and unexpected result is produced. The device of claim 5 produces a similar result as a plurality of voltage converters connected in series.

With respect to claim 6, Herbert discloses the device as recited in claim *3*, and further, it would have been obvious to a person of ordinary skill in the arts to duplicate the parts of claim *3* to have the electrical generator comprise a plurality of movable arms connected in parallel. The motivation for doing so would have been to create a

plurality of power sources connected in parallel, where the total output of the system is the cumulative current converted by the movable arms. The device of claim 5 produces a similar result as a plurality of current converters connected in parallel.

With respect to claim 11, Herbert discloses the device as recited in claim 10, as discussed above, and further discloses the Lorentz actuator receives the electrical power from a source that is selected from the group consisting of an ac source and a dc source. The Herbert device is an analog or digital electrical isolator (paragraph 50, lines 6-8). It would be obvious to a person skilled in the art that the source supplying the analog or digital input signals is also a dc or ac source.

With respect to claim 12, Herbert discloses the device as recited in claim 1, and further discloses the source is provided by the dc power source, wherein the source generator further comprises a switch in electrical communication with the source to deliver pulses of electricity to the movable arms. Herbert discloses the capacitor plates of the MEM system can accept analog and digital signals (paragraph 50). It would have been obvious to provide the device with a switch. The motivation for doing so would have been to pulse the dc input voltage in order to create the digital input signal.

With respect to claim 19, Herbert discloses the device as recited in claim 1, and further, it would have been obvious to duplicate the source generator of claim 1 in order to create the device comprising a plurality of source generators connected to a common electrical input. The motivation for doing so would have been to create a plurality of mechanical displacement outputs. The plurality of source generators is analogous to a plurality of independent voltage converters.

With respect to claim 26, Herbert discloses the method as recited in claim 22, as discussed above, and further, it would have been obvious to duplicate the electrical generator in order to provide a plurality of *electrical generators* connected in series. The motivation for doing so would have been because summing a plurality of voltage sources (i.e. the outputs of the voltage converters) requires the sources to be arranged in series.

With respect to claim 27, Herbert discloses the method as recited in claim 22, and further, it would have been obvious to duplicate the electrical generator in order to provide a plurality of *electrical generators* connected in parallel. The motivation for doing so would have been to sum a plurality of parallel current converters.

With respect to claim 34, Herbert discloses an electrically isolated power transfer MEMS device (figure 2) for delivering electric power to a load, the device comprising:

a mass (figure 2, item 22; paragraph 46, lines 5-9) disposed at a first end of the device that is capable of producing an output in response to a force of vibration of the MEMS device;

an electrical generator (figure 2, item 24; paragraph 47, lines 1-5) disposed at a second end of the device receiving the output from the mass and, in response to the output, is actuated to generate electrical power that is delivered to the load;

a beam (figure 2, items 12, 28 and 30; paragraph 44, lines 8-10; paragraph 46, lines 1-5) suspended for motion along an integrated circuit substrate connecting between the mass and electrical generator that

communicates the output of the vibration to the electrical generator, thereby actuating the electrical generator; and

Herbert does not expressly disclose a load positioned on the integrated substrate communicating with and for being powered by the electrical generator.

It would be obvious to one skilled in the art that the Herbert device comprises a load for receiving the signal output by the sensor (electrical generator). Further, as discussed above, it would have been obvious to combine the load and its power source onto one substrate, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art.

With respect to claim 37, Herbert discloses the device as recited in claim *35*, and further discloses the electrical generator comprises an electrical loop having movable conductive arm in mechanical communication with the beam, wherein movement of the beam deflects the arm in the presence of a magnetic field to change the loop area and generate power for the load (paragraph 45, lines 8-11; paragraph 50).

With respect to claim 38, Herbert discloses the device as recited in claim 37, and further, it would have been obvious to duplicate the parts of the electrical generator in order to provide a plurality of movable arms connected in series. The motivation for doing so would have been to create a plurality of voltage sources connected in series, where the total output of the system is the cumulative voltage converted by the movable arms.

With respect to claim 39, Herbert discloses the device as recited in claim 37, and further, it would have been obvious to duplicate the parts of the electrical generator in

order to provide a plurality of movable arms connected in parallel. The motivation for doing so would have been to create a plurality of current sources connected in parallel, where the total output of the system is the cumulative current converted by the movable arms.

8. Claims 14-15, 31 and 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herbert, in view of Mihailovich.

With respect to claim 14, Herbert discloses the device as recited in claim 13, but does not expressly disclose the capacitor plates receive electrical power from a source that is selected from the group consisting of: an ac source and a dc source.

Mihailovich discloses an electrically isolated power transfer MEMS device for delivering electric power to a load, and further discloses capacitor plates (figure 2, items 24, 28; column 4, lines 46-54) receive electrical power from a source that is selected from the group consisting of: an ac source and a dc source (column 3, lines 10-12).

Herbert and Mihailovich are analogous because they are from the same field of endeavor, namely micro-electromechanical systems (MEMS) for isolating an electrical signal.

At the time of the invention by application it would have been obvious to combine the capacitor plate MEM isolator disclosed in Herbert with the electrical power sources disclosed in Mihailovich.

The motivation for doing so would have been to electrically isolate any type (ac and dc) of input signal.

With respect to claim 15, Herbert and Mihailovich disclose the device as recited in claim 14, and Mihailovich further discloses the electrostatic generator draws power from the dc power source, as discussed above.

Mihailovich and Herbert do not expressly disclose the electrostatic generator comprises a switch to deliver pulses of energy. Herbert discloses the capacitor plates of the MEM system can accept analog and digital signals (paragraph 50, lines 6-8). At the time of the invention by applicants, it would be obvious to a person of ordinary skill in the art to provide the device with a switch. The motivation for doing so would have been to pulse the dc input voltage in order to create a digital input signal.

With respect to claim 31, Herbert discloses the method as recited in claim 22, and Herbert, in view of Mihailovich, discloses the apparatus necessary to complete the method recited in claim 31, as discussed above in the rejection of claim 15.

With respect to claims 56 and 57, Herbert discloses the device of claim 1, and the method of claim 22, as discussed above, but does not expressly disclose the load is on an integrated circuit. Mihailovich discloses the load (figure 1, item 18) may comprise a microprocessor (column 4, lines 32-45). Microprocessors are commonly located on integrated circuits, as is known in the art.

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herbert in view of Ko (US 6,987,435).

Herbert discloses the device as recited in claim 1, but does not expressly disclose the power transfer structure includes a lever having a first end pivotally attached to the substrate and a second end opposite the first end, wherein the input end

is disposed proximal the fist end, and wherein the output end is disposed proximal the second end.

Ko discloses power transfer structure includes a lever (figure 6b, item 25; column 4, lines 42-48) having a first end pivotally attached to the substrate (figure 6b, items 2 and 24). Further, according to the disclosure of Ko, the input end is disposed on the first (short) end of the lever, while the output is disposed on the second (long) end of the lever.

Herbert and Ko are analogous because they are from the same field of endeavor, namely micro-electromechanical actuators that provide mechanical displacements.

At the time of the invention by applicants, it would have been obvious to a person of ordinary skill in the art to combine the MEM transfer device disclosed in Herbert with the lever disclosed in Ko.

The motivation for doing so would have been to amplify the displacement of the power transfer structure.

10. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mihailovich.

Mihailovich discloses an electrically isolated power transfer MEMS device (figure 2) for delivering electric power to a load, the device comprising:

a mass (figure 2, items 32 and Cd; column 4, lines 56-59) disposed at a first end of the device that is capable of producing an output in response to a force of vibration of the MEMS device (column 3, lines 26-27; column 4, lines 66-67);

an electrical generator (figure 2, items Cc and 36; column 4, lines 63-65) disposed at a second end of the device receiving the output from the mass and, in response to the output, is actuated to generate electrical power that is delivered to the load;

a beam (figure 2, item 10; column 4, lines 2-4 and line 66 to column 5, line 7) suspended for motion along an integrated circuit substrate connecting between the mass and electrical generator that communicates the vibration to the electrical generator, thereby actuating the electrical generator; and

a load (figure 1, item 18; column 4, lines 32-45) communicating with and for being powered by the electrical generator.

Mihailovich does not expressly disclose the load is positioned on the integrated substrate. At the time of the invention by applicants, it would have been obvious to one skilled in the art to integrate the load with the power source on the same substrate, since it has been held that forming in one piece an article which has formally been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adi Amrany whose telephone number is (571) 272-0415. The examiner can normally be reached on weekdays, from 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA

BURTON S. MULLINS
PRIMARY EXAMINER